

ABSTRACT

MODELING AND Assimilating Ocean Color Radiances

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Radiances are the source of information from ocean color sensors to produce estimates of biological and geochemical constituents. They potentially provide information on various other aspects of global biological and chemical systems, and there is considerable work involved in deriving new information from these signals. Each derived product, however, contains errors that are derived from the application of the radiances, above and beyond the radiance errors.

A global biogeochemical model with an explicit spectral radiative transfer model is used to investigate the potential of assimilating radiances. The results indicate gaps in our understanding of radiative processes in the oceans and their relationships with biogeochemical variables. Most important, detritus optical properties are not well characterized and produce important effects of the simulated radiances. Specifically, there does not appear to be a relationship between detrital biomass and its optical properties, as there is for chlorophyll. Approximations are necessary to get beyond this problem. In this report we will discuss the challenges in modeling and assimilation water-leaving radiances and the prospects for improving our understanding of biogeochemical process by utilizing these signals.